Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Table Rock Lake

Waterbody Segment at a Glance:

Counties:	Barry, Stone and Taney Counties
Nearby Cities:	Kimberling City, Branson
Size of Impairment:	43,100 acres
Pollutant:	Nutrients
Sources:	Point and Nonpoint sources

Proposed for addition to 2002 303(d) list

TMDL Priority Tanking: To be determined

State map showing Table Rock Lake and its watershed

Description of the Problem

Beneficial Uses of Table Rock Lake

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life and Human Health associated with Fish Consumption
- Whole Body Contact Recreation (swimming)
- Boating and Canoeing

Use that is impaired

- Whole Body Contact Recreation (swimming)

Standards that apply

- All waterbodies in Missouri are protected by the *general* criteria (standards) contained in Missouri's WQS, 10 CSR20-7.031(3). These criteria (also called *narrative* criteria) list substances that all waters "shall be free from". For example, sections (3)(A) and (3)(C) state:
  - Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.
  - Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.

Table Rock Lake is an exceptional water resource. It provides unequaled recreational and economic opportunities for Missouri's citizens. It is nationally known for its excellent fishing. It also provides magnificent scenery due to its location in the Ozark Mountains. Table Rock Lake is the centerpiece

for a wide variety of tourist attractions. The watershed of Table Rock Lake is estimated to produce over a billion dollars in tourism revenue each year.

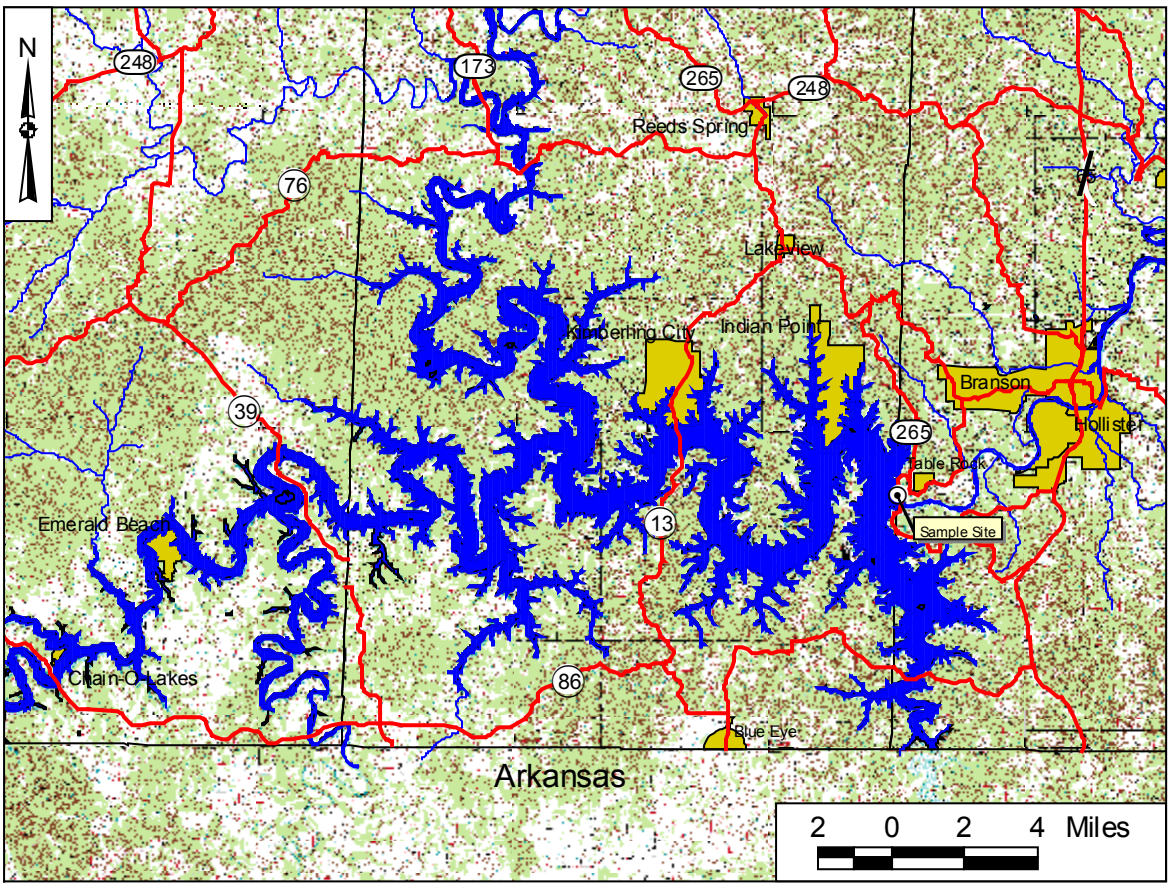
Table Rock Lake was not included on the EPA approved 1998 303(d) list of impaired waters. In recent years, however, concern has been growing due to reduced water clarity. The problem with clarity is caused by increased amounts of nitrogen and phosphorus entering the lake. Nitrogen and phosphorus are plant nutrients, which can cause excessive growth of algae. Phosphorus has been identified as the chief cause for the increase in algae, which impart a green color to the water and reduce water clarity. This is particularly true in the James River arm of the lake, which receives heavy loads of phosphorus from urban stormwater, wastewater treatment plants and nonpoint sources. Increasing resident populations in southwest Missouri, the large number of tourists visiting the area, commercial and industrial development and livestock production have caused the increased nutrient loading throughout the lake.

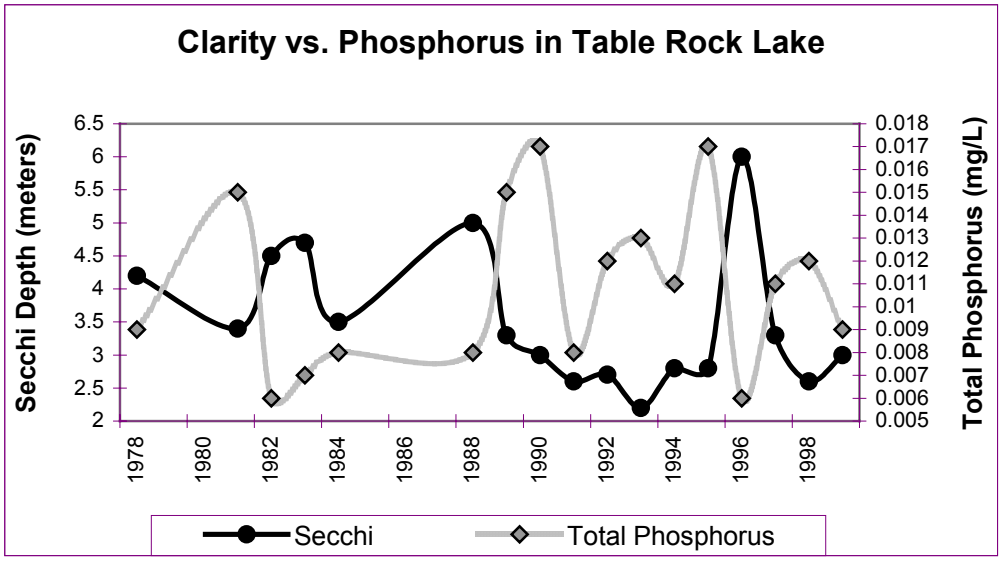
The lake is currently proposed for addition to the 2002 303(d) list. A Total Maximum Daily Load (TMDL) was completed on the James River in 2001 for phosphorus and nitrogen. This will address the decreasing water clarity in Table Rock Lake, as well as the algal growth in the James River. The TMDL calculates the reductions in nutrient loading needed to control algal growth. A phosphorus limit of 0.5 mg/L (milligrams per liter or parts per million) has been established for all discharges into the Missouri portion of the Table Rock Lake basin equal to or greater than 22,500 gallons per day. The largest point source in the basin, the Springfield Southwest Treatment Plant, initiated phosphorus removal from its discharge in March 2001 and has been achieving results much lower than the 0.5 mg/L limit.

Increased phosphorus levels will continue to be a problem, however, even after nutrient loading is reduced. This is because phosphorus attaches to soil particles, which can be washed into streams by erosion. Table Rock Lake acts as a "sink" as the sediment load coming from its tributaries settles on the bottom of the lake. Phosphorus will continue to be released from this sediment for an unknown period of time. Due to this fact, it is impossible to predict when improvements in the clarity of the lake will occur after nutrient target loads are met.

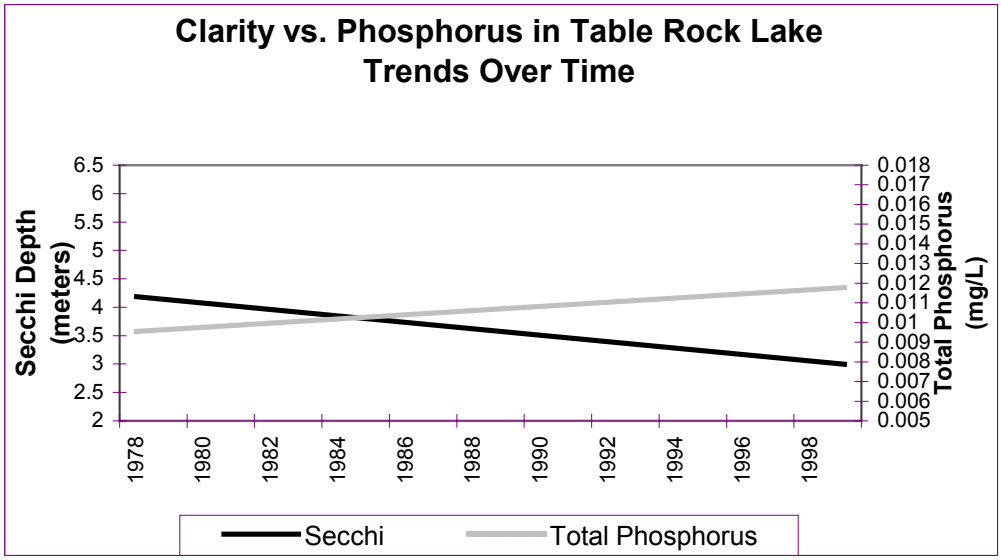
A map of Table Rock Lake and graphs of the data may be found below. The graphs show the distinct relationship between phosphorus and clarity: when phosphorus increases, clarity decreases; when phosphorus decreases, clarity increases.

Table Rock Lake in southwestern Missouri





Source: Dr. Jack Jones, Professor of Limnology, University of Missouri at Columbia



Source: Dr. Jack Jones, Professor of Limnology, University of Missouri at Columbia

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